

Center for the Study of Traumatic Stress

2018 Annual Report

CSTS



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“CSTS fulfills its mission through leadership, education, teaching, training, research, scholarship, service, outreach, collaboration, consultation and global health engagement.” — Dr. Robert J. Ursano

From the Director

Dear Center Colleagues and Friends,



The Center for the Study of Traumatic Stress (CSTS) is a core part of the Department of Psychiatry in the F. Edward Hébert School of Medicine (America's Medical School) of the Uniformed Services University (USU). Since CSTS was established in 1987, we have

been successfully and proudly fulfilling our mission to mitigate the impact of trauma from exposure to war, disasters, terrorism, community violence and public health threats. The Center actively supports the Strategic Framework and mission of USU, as well as the Military Health System, and the broader mission of the Department of Defense (DoD). Through our broad range of activities, we sustain national readiness, enhance national security, and serve an essential role for the DoD and the nation.

CSTS fulfills its mission through leadership, education, teaching, training, research, scholarship, service, outreach, collaboration, consultation and global health engagement. The Center uses a multi-disciplinary and collaborative team of scientists, educators, clinicians and leaders to carry-out these activities to advance our mission and goals and to enhance national preparedness.

The Center focuses on health issues of special interest to the military including post-traumatic stress disorder (PTSD), traumatic brain injury (TBI), suicide and suicide-related behavior. CSTS helps inform our nation's policies and responses to the impacts of exposure to trauma from disasters, both human-made and natural.

The work of the Center ranges from the micro level in our laboratories to the macro level in our communities, our nation and across the globe. We move science from the gene, to the cell, to the organism, to the person, to the community, to the world. We move from knowledge to action by providing rapid consultation, education and knowledge support to personnel who respond

to the health needs of Service members and their families, and personnel who respond to disasters, public health threats, and other crises around the globe. CSTS combines and integrates the two fields of military psychiatry and disaster psychiatry which makes CSTS unique.

The Center uses innovative approaches to neuroscience, and conducts ground-breaking research on timely topics such as suicidal behavior in the Army, and the impact of death and loss on family members of Soldiers. One recent example of an innovative approach is our involvement in "big data" and precision medicine. Our innovative analytic activities involve advanced techniques including machine learning, complex algorithms, and predictive analytics. We use data mining techniques and state-of-the-art statistical methods to analyze previously untapped data sources independently and jointly with other data to gain new insights resulting in better and faster decision-making, and improving health.

In the pages of this Annual Report, you can read summaries of our work in both military and civilian populations to enhance psychological health, speed the recovery from, and help prevent the negative consequences of trauma on individuals, families, communities and nations. The goal of our work is to improve trauma-related care by preparing treatment providers to address the impact of trauma and its far-reaching effects, thereby building a more trauma-informed environment across the continuum of our military and civilian health care systems.

On behalf of everyone at CSTS, I would like to extend our appreciation to all our colleagues and friends who have collaborated with us and assisted us throughout this past year to help us support the Military Health System, the DoD and our nation.

Robert J. Ursano, MD
Professor of Psychiatry and Neuroscience
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Director, Center for the Study of Traumatic Stress
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Our Mission

As an integral part of USU, CSTS's activities support the USU Strategic Framework and the mission of the DoD. CSTS is committed to advancing trauma-informed care. We are dedicated to furthering the nation's understanding of the impact of trauma on individuals, families and communities. The Center is part of our nation's federal medical school (America's Medical School) at USU and the Center's mission is aligned with the needs of the DoD and the nation, and is well-positioned to rapidly respond to DoD mission-relevant activities.

The Center's work includes a broad range of trauma exposures: combat, terrorism, natural and human-made disasters, public health threats, and humanitarian

operations. CSTS has been involved in nearly every major disaster our nation has experienced in the past 30 years. The Center helps to ensure that behavioral health is addressed in the face of public health threats, disaster planning and disaster recovery.

Mitigating the effects of disaster and trauma in military and civilian populations is part of the effort to foster community and national resilience. The Center informs and educates community, regional, state, national and global stakeholders in government, industry, healthcare, public health, and academia. CSTS contributes to advancing trauma-informed care by providing leadership in research, education, training, consultation, global health, and service.



Research

CSTS is involved in a broad range of research including epidemiological, clinical and laboratory research. The research is designed to support the Military Health System (MHS) in its efforts to maintain a medically-ready military force for both peacetime and wartime, and to deliver integrated, affordable, effective, and high quality health services. CSTS research encompasses investigations ranging from the causes of suicide in Service members, to the psychological responses to trauma and disasters, to clinical investigations of the symptomatology and treatment of PTSD. The ultimate goals of all CSTS research activities are to improve military readiness and the quality of military care.

RESEARCH ON SERVICE MEMBERS

Study to Assess Risk and Resilience in Servicemembers — Longitudinal Study (STARRS-LS)

Formerly Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)

The six-year Army STARRS project was conducted from 2009 to 2015. STARRS-LS, the continuation



project, began in 2015 and will proceed through at least 2020. Both research projects were designed and conducted under the scientific direction and project management oversight of CSTS through a collaborative effort involving USU, the University of California San Diego (UCSD), Harvard University and the University of Michigan.

Army STARRS, funded by the Army, included several separate but integrated studies designed to comprehensively examine the mental health and resilience of active duty Soldiers including Regular Army, Army National Guard and activated Army Reserve. The project involved large representative

samples of Soldiers, making it the largest research effort of mental health risk and resilience ever conducted among military personnel. The largest of the studies was an historical cohort study of all Soldiers (more than 1.6 million) on active duty from 2004 to 2009. Army STARRS also included cross-sectional studies, a longitudinal study, and two case-control studies that involved collecting data directly from a combined total of more than 100,000 active duty Soldiers throughout the U.S. and overseas. The studies included administering questionnaires and neurocognitive tests, collecting blood samples, and performing state-of-the-art data analyses and biomarker assays. The project produced large, rich and representative datasets to serve the goals of Army STARRS.

The Center is currently expanding and enhancing the Army STARRS research through a five-year DoD-funded project called STARRS-LS. Under STARRS-LS, CSTS is continuing to use the STARRS platforms, systems and data to conduct further analyses and to extend the data by obtaining an additional six years of Army/DoD administrative data (2010-2015) for the 2004-2009 historical cohort established under Army STARRS. In addition, STARRS-LS includes administering two waves of follow-up surveys through 2020 for a longitudinal study involving a sample of more than 50,000 Soldiers who participated in Army STARRS.

Throughout 2018, the research team continued working closely with the Office of the Deputy Under Secretary of the Army (ODUSA) and the Army Analytics Group (AAG) to obtain and process additional Army/DoD administrative records for the historical cohort. Once this database is complete, it will allow analyses of more than 3 million active duty Soldiers over a 12-year period (2004-2015). The research team also completed the first wave of follow-up survey data collection for the STARRS-LS cohort and launched the second wave. This longitudinal study is extending the time-frame of Army STARRS to collect and analyze further outcome information from



participants throughout their Army careers, and for those who transition out of the Army, through their adjustment to civilian life.

In 2018, the research team conducted many briefings of the research progress and findings. These included three in-person briefings to the STARRS Government Steering Committee, one meeting with the STARRS Scientific Advisory Board, and an in-person briefing at the Pentagon to senior DoD and Army leadership including the Assistant Secretary of Defense for Health Affairs, the Deputy Under Secretary of the Army, the Army Surgeon General, G-1 and many other senior Army leaders. In addition, the research team presented findings at many military and civilian scientific meetings and conferences.

STARRS continued the partnership established with the Collaborative Health Initiative Research Project (CHIRP) to perform whole genome sequencing on DNA from tens of thousands of STARRS participants. CHIRP is a precision medicine-based initiative being conducted at USU in collaboration with the National Institutes of Health (NIH) and the DoD.

Due to the abundance of actionable findings produced by the STARRS research, the Army established a workgroup called the STARRS Research Advisory Team (SRAT). The SRAT is comprised of Army and DoD personnel tasked to review STARRS findings and recommend actions the Army and/or DoD can take based on those findings. The STARRS PIs met on a monthly basis with SRAT throughout 2018 to discuss how best to translate STARRS research findings into actions.

The STARRS research team continued to be

highly-productive throughout 2018 at analyzing vast amounts of data, writing-up the results, and submitting manuscripts to scientific journals for publication. At the end of 2018, the team had published 75 STARRS papers in peer-reviewed scientific journals, had one paper accepted for publication but not yet published (in press), had submitted 10 papers that were awaiting a decision for publication by journals, and had many additional papers in various stages of progress. This extraordinary, ground-breaking and complex research project has continued to produce benefits for the Army, the DoD, and the nation.

Psychological Stress and Resilience in Mortuary Affairs (MA) Soldiers: Longitudinal Study

U.S. Army mortuary affairs (MA) Soldiers recover, identify and evacuate the remains of the dead from the theater of war. They are exposed to one of the highest stressors of war, combat death, as well as deployment-related stress and work in the combat environment. This longitudinal research study examines the individual, unit, and family stressors, risk factors, and resiliency of MA Soldiers who deploy to the Middle East. Questionnaires are group-administered to MA detachments before and after the deployment. Empirical and descriptive data are collected on factors such as PTSD, depression, distress (e.g., anger, hostility, somatization), substance use, and instrumental and emotional support. Soldiers also have the option to donate saliva samples for DNA and RNA, which will be analyzed for potential biomarkers of stress and resiliency. In 2018, Reserve MA Soldiers from the 246th and



311th QM CO MA (Companies from Puerto Rico) and the 962nd QM CO MA (from Pacific Rim locations) were deployed to the Middle East. The CSTS data collection team met with the deploying detachments at Fort Hood, TX while they were there for mobilization/demobilization activities just prior to and after deployment. In total, 218 questionnaires were collected and most Soldiers (82%) donated saliva samples for DNA and RNA genetic analysis (358 saliva samples collected). Since the study began in 2005, the CSTS data collection team has met with MA Soldiers more than 60 times and collected more than 3,100 questionnaires. Data analyses in 2018 included a factor analysis of items assessing sensitivity to blood, injury, and mutilation and a manuscript was produced. Findings from this study will target resiliency, preparation, training, and education of Soldiers for the stressors of deployment and work with the dead.

Troop Education for Army Morale (TEAM)

TEAM is a novel stress management and resilience building early intervention program designed to improve post-deployment re-adjustment in U.S. Army mortuary affairs (MA) soldiers – a group at high risk for psychological problems. The intervention is based on the five evidence-informed principles of Psychological First Aid (safety, calming, connectedness, self-efficacy, and hope/optimism) and delivered through four group workshops, informational handouts, a dedicated website, and phone and email support services. A total of 125 MA Soldiers participated in the study. Baseline questionnaires indicated that MA soldiers had a high number of traumatic exposures and rates of PTSD and depression similar to combat troops. The intervention did not specifically reduce rates of PTSD. However, the TEAM intervention was well accepted by the Soldiers and the majority of Soldiers (89%) reported that TEAM was helpful for them. Calming (relaxation training) and problem solving were two of the skills reported to be most helpful. Findings from TEAM will inform future interventions with military and civilian populations that handle the remains of the dead.

Ecological Momentary Assessment of Post-traumatic Stress Symptoms in U.S. Military Service Members (Daily Diary Study)

The Daily Diary Study uses an ecological momentary assessment methodology to monitor in real time post-traumatic stress symptoms of U.S. Service members. This study examines the relationship of variability in stress symptoms, collected four times daily over a 15-day period, to psychiatric disorders, sleep, health risk behaviors (e.g., alcohol and tobacco use), pain, and other areas of health and functioning. Participants complete daily assessments on electronic tablets using a sophisticated software application developed in collaboration with the National Center for Telehealth and Technology (T2) specifically for use in this study. Psychiatric disorders (e.g., PTSD, depression) are assessed at baseline and in one and three month follow-up assessments. Participants have the option to donate saliva and/or blood samples for genetic analysis to identify potential genetic biomarkers and gene-environment interactions that may distinguish and/or mediate traumatic stress responses and resilience to stress-related disorders. New in 2018, study participants have the option to wear a wrist actigraph during the 15-day daily diary assessment period. The actigraph provides an objective measure of sleep that will complement participants' self-reports. To date, 144 Service members have enrolled in the study. Among those, 33 enrolled



Dr. Biggs presenting Daily Diary Study findings.

in 2018 and together they completed almost 1,600 daily diary assessments. Most participants provided biological samples for genetic analysis; 88 saliva and 129 blood samples were collected. Inclusion of actigraphy was introduced late in 2018 and six Service members wore an actigraph. Data analyses include examination of the relationship between measures of sleep (e.g., hours slept, sleep quality) and variation in post-traumatic stress symptoms the following day. In 2018, study findings were presented in seven poster sessions at local, national, and international scientific conferences and a manuscript was prepared for publication. The Daily Diary Study represents the cutting-edge in psychological assessment methodology, measures, equipment, technology, and research designed to better understand and improve the well-being of Service members.

Reserve Component of the U.S. Armed Forces

The Citizen Soldiers of the Reserve Component (RC) of the U.S. Armed Forces experience unique stressors, substantially different from those experienced by the Active Component (AC), when the nation is at war and when the RC is called upon for emergency service, such as disaster relief. The Center is strongly committed to supporting the RC through a broad range of activities that are oriented to the RC. RC members and their families are included in research conducted by the CSTS Child and Family Program addressing the needs of children and families affected by trauma. In addition to research that focuses on the RC, CSTS provided consultation to RC units. Through this consultation, the Center provided the RC leadership with information products specifically geared to their needs. The Center also enhanced civilian understanding of the special nature of the RC's mission, structure, and unique stressors by devoting a chapter to the RC in the recently published CSTS volume, *U.S. Army Culture: An Introduction for Behavioral Health Researchers*.

CSTS continues our nationwide longitudinal research study on the National Guard and Reserve Service members, in collaboration with Dr. Sandro Galea at Boston University. Using a representative

national cohort, this study specifically addresses the health and resilience factors and experiences of the Guard and Reserve, as distinct from the experiences of Active Duty Service members. CSTS is actively analyzing this comprehensive dataset to address the epidemiology and trajectory of post-traumatic stress, deployment stress, health risk behaviors and health care utilization in the National Guard and Reserves Service members of the Army, Navy, Air Force and Marine Corps. For example, four distinct and heterogeneous post-deployment PTSD trajectories have been identified, i.e., resilience, recovery, late onset, and chronic. The trajectories are associated with various levels of suicide risk, which supports the importance of follow-up assessment of suicide risk. Four waves of data collection have been conducted and we are planning a fifth wave of data collection to extend the data on trajectories of health in this important population.

The Army STARRS project and its follow-on research, STARRS-LS, provided a wealth of data about RC soldiers. The Army STARRS New Soldier Study included survey data collection from approximately 23,000 RC Soldiers, and blood sample collection from a subset, during their first week of basic training. This data collection at the very beginning of Soldiers' military service provided an opportunity to follow them through the course of their military careers and beyond in order to identify risk factors for health outcomes, as well as factors that promote resilience. The blood samples have been used for the examination of biomarkers. Army STARRS research also included RC members in the All Army Study, which included a sample of the entire Army, and in the in-theater study which included a sample of Soldiers serving in Afghanistan. Both of these studies provided data that can be used in long-term research while also providing a snapshot of current health and mental health. These studies created the opportunity for assessment of concentrations of risk in order to develop future interventions to promote and sustain health among RC members.

The STARRS-LS research involves the continuation of data collection from Army STARRS participants and allows further in-depth analysis of risk and resilience factors among members of the RC.

The Center conducted biomarker research studies in National Guard units before and after deployment for combat tours in Afghanistan.

PTSD and Sleep Study

The PTSD and Sleep Study research is designed to use existing datasets and state-of-the-art analytic methods to better understand the relationship between PTSD and sleep disorders in the military. Sleep disorders are a frequent problem among Service members and even more so among those suffering with PTSD. This research, being done in collaboration with Harvard Medical School, seeks to understand the relationship between these entities and to optimize treatment selection for military healthcare system clinicians seeing patients with these conditions. The study will use heterogeneity of treatment effects (HTE) analyses to identify predictors of variation in sleep disturbance treatment response and develop predictive analytic models to improve treatment selection for individuals with PTSD-related and other sleep disturbances.



RESEARCH IN THE CHILD AND FAMILY PROGRAM

The Center's Child and Family Program (CFP) is a national leader in advancing scientific and clinical knowledge, and providing educational resources addressing the needs of children and families affected by trauma, with particular focus on our nation's military families. Military children and families demonstrate unique strengths and vulnerabilities

as they are affected by combat-related illness and injury, bereavement, child maltreatment and family violence. CFP's pioneering research addressing these complex issues has been translated into scholarly publications, as well as actionable and educational materials for military and government stakeholders, clinicians, and community leaders. CFP also provides consultation to DoD leadership, national media outlets and engages in academic and professional projects that more broadly support children within the U.S. and throughout the world.

Family Bereavement

The National Military Family Bereavement Study (NMFBS)

NMFBS is the first scientific study to examine the impact of a U.S. military service death on surviving family members. The goal of the study is to build upon the civilian research literature on bereavement and its impact on survivors and determine how psychological, physical and/or behavioral outcomes of the grieving process are influenced by family members' pre-existing psychological and physical health, social and grief support, and military-specific factors. The longitudinal portion of the study, which consisted of annual interviews over a three-year period, was completed in 2017. Approximately 850 adults and 120 children completed the longitudinal portion of the study, and 981 participants provided saliva samples for analysis of genetic biomarkers associated with bereavement-related outcomes. Findings from the study have informed ongoing discussion to define appropriate diagnostic criteria for a condition of impairing grief. As a result of this groundbreaking work, CSTS has partnered with colleagues at Columbia University, New York University, University of Pittsburgh, and the University of California San Diego in developing a proposal for alternate and more clinically-relevant criteria of a persistent grief disorder to be included in future editions of the DSM. A manuscript discussing these issues has been accepted for publication in *Psychological Medicine*. In 2018, CSTS Scientists also gave several presentations regarding findings from NMFBS at national conferences.

Stepping Forward in Grief (SFG)

NMFBS found that a sizeable portion of surviving military family members suffer from high levels of grief and distress, putting them at risk for harmful changes in mental and physical health. Based on these results, CFP formed a partnership with the Center for Complicated Grief at Columbia University to adapt Complicated Grief Therapy (CGT), shown to be helpful in civilian populations, into a digital intervention (GriefSteps) that is designed to assist with grief integration, and decrease risk for long-term problems. The goal of SFG, a randomized controlled trial, is to learn how to best assist military family survivors with their grief and reduce the long-term problems that can occur after a loss. Virtual apps may be an extremely helpful resource for current and future bereaved military family members. In 2018, 1,038 SFG participants were screened for eligibility, 464 participants consented to participate, and 249 participants were randomized to one of the two conditions.



Study of Long-Term Outcomes of Terrorism-Related Grief

CFP partnered with Voices of September 11th (VOICES), a not-for-profit organization that provides services for 9/11 families, and the Canadian Resource Centre for Victims of Crime (CRC), an organization that is engaged with, and supportive of, family members who were bereaved by the Air India Flight 182 bombing. The study partners investigated long-term bereavement outcomes following a terrorism-related death, including grief, traumatic symptoms, resilience and post-traumatic growth. More than 400 family members bereaved by the bombing of Air India Flight 182 or by the events of September 11th completed online questionnaires about their experiences. The study used findings to develop preliminary working models for understanding risk and protective factors for bereaved family members of terrorism-related deaths. Findings from this study were presented to the research community at pro-

fessional meetings and a manuscript was accepted for publication.

Child Maltreatment in U.S. Military Communities and Families

Several ongoing CFP projects focus on identifying risk factors for child maltreatment to inform the development of prevention and intervention strategies that promote military family health and resilience. CSTS initial work focused exclusively on child neglect, the child maltreatment type most commonly reported in the U.S. and most frequently associated with child fatality. The aim was to identify factors that contribute to elevated risk of child neglect by investigating characteristics of substantiated child neglect cases in U.S. Army families. Data were collected from records of 400 substantiated child neglect cases from Army installations across the country. A second CFP project, supported by funding awarded from the DoD in 2016, builds on this line of research to advance understanding of risk and protective factors for child maltreatment in military families from all Service branches. CSTS efforts to date have focused on examining differences in the prevalence of child abuse and neglect types in relation to child, family, and Service member characteristics. Future work will include a population-based investigation of all active duty Service members with one or more children between the years 2004 and 2014 to examine longitudinal trends in child maltreatment in military families. Results from this project will inform the understanding of changes in risk and protective factors for child maltreatment across the military life course.

Combat Injured Families

CSTS Scientists have conducted a set of three studies over the past several years to examine the short- and long-term impacts of severe combat injury on military families, aiming to better understand and address the needs of combat injured military families. The first study involved interviews with military families assessing the unique and complex challenges related to combat injury and associated family functioning. Forty families were interviewed at Operation Purple Healing Adventures (OPHA), an

annual summer camp program for combat injured Service members and their families sponsored by the National Military Family Association (NMFA), and data analysis continues. The second study investigates the impact of combat injury on military families over time. Participating families at Walter Reed National Military Medical Center (WRNMMC) and San Antonio Military Medical Center provided valuable information about their experiences with combat injury over time, which will be used to inform intervention strategies for spouses and children of combat injured Service members. Data collection was completed in 2015 and data analyses and manuscript preparation continue. The final study, Families OverComing Under Stress-Combat Injury (FOCUS-CI) consists of a pilot for a novel intervention for children and families of combat injured Service members in order to establish its feasibility and efficacy. Using a randomized controlled trial approach, the intervention is family-centered, strength-based, and evidence-informed to assist families coping with severe combat injuries by providing instrumental support and teaching emotion regulation, problem solving, communication, and goal-setting skills. Data were collected from families in Washington, DC, Chapel Hill, NC and San Antonio, TX and data analyses comparing the effectiveness of the FOCUS-CI intervention on family functioning to the existing standard of care are ongoing. In addition, data collected from this project have provided novel insight into issues of intimacy within marital relationships between combat injured Service members and their spouses, suggesting that this is negatively impacted by spouse post-traumatic stress related to the Service member's combat injury. A manuscript is currently in progress. Findings from these studies will help us better understand the experience of combat injury, its impact on Service members and their families, and inform programmatic intervention that can better address the needs of military families.

Family Violence

Since 1995, the Center's Family Violence and Trauma Project has helped the Army Family Advocacy Program (FAP) meet its research and education needs. Staple products of this decades-old relation-



ship include the publication and distribution of two newsletters — *Research Review* (RR) and *Joining Forces, Joining Families* (JFJF). RR provides brief summaries of current family violence research of interest to family advocacy, medical, and social service providers. Under the motto “Real World Research for Family Advocacy Programs,” JFJF consists of in-depth coverage of research topics and methods. For example, the Summer 2018 edition of JFJF featured an interview with Dr. David Finkelhor, Director of the Crimes Against Children Research Center, on the limitations of screening for Adverse Childhood Experiences in clinical settings.

CSTS research products produced for the Army FAP in 2018 include bi-annual briefing books containing statistics on child and spouse maltreatment for all Army installations that report family violence as well as theater-level books for Europe, Japan, Korea, and the Army. Data presented include the type, frequency and severity of substantiated incidents of maltreatment as well as the demographics for victims and offenders. Center Scientists also participated in the annual Army Fatality Review Board (FRB), wrote the initial report, and enhanced the methodological rigor of the annual reports. CSTS also supported the Army Family Violence Research Subcommittee in reviewing, coordinating, and disseminating family violence research conducted with Army Central Registry data and other Army family violence data sources.

Throughout any given year, Army FAP leadership is tasked with responding to a variety of urgent topics, and Center Scientists assist their efforts by

providing relevant research findings and associated recommendations where such literature exists. Center Scientists also assisted other Army agencies, such as the Office of the Assistant Secretary of the Army (Manpower and Reserve Affairs), the Office of the Assistant Chief of Staff for Installation Management, the Installation Management Command, the Medical Command, the Army Military Police School, and the Criminal Investigation Division. The Center provided recent publications on subjects of interest such as abusive head trauma, infanticide, assistance with children who are exposed to family violence, firearms and intimate partner homicide, child sexual abuse, youth who sexually offend, strangulation as well as other topics.

RESEARCH IN NEUROSCIENCE AND NEUROBIOLOGY

Laboratory Research in Neuroscience and Neurobiology

Genetics and Biomarkers

CSTS laboratory research continued to search for the potential biomarkers for suicidal risk. Suicide is one of the 10 leading causes of death in the U.S. and the suicide rate in the military population has increased since the Iraq and Afghanistan wars. However, few biomarkers for suicidal risk, particularly current suicidal ideation (CSI), have been identified. CSTS has examined the association of four candidate genes with CSI in active duty U.S. Army Special Operations Command and National Guard units (n= 3,889) in Iraq and Afghanistan between November 2009 and July 2014. Current PTSD symptoms, CSI, and traumatic events were assessed using the PTSD Checklist (PCL) and PHQ-9, and the Life Events Checklist (LEC) that meet the DSM-IV PTSD definition of a traumatic stressor, respectively. All genotypes of saliva DNA were discriminated using the TaqMan 5'-exonuclease assay. The associations between CSI and brain-derived neurotrophic factor (BDNF), FK506 binding protein (FKBP5), catechol-O-methyltransferase (COMT), or S100A10 (p11) were examined. The research found CSI was associated with BDNF, but not FKBP5, COMT, and



p11. Female Soldiers reported CSI more often than males, although gender did not affect CSI severity. In addition, CSI was associated with depression, PTSD, and BDNF, but not traumatic events. The BDNF Val-66Met contributed to the severity of CSI even after adjusting for PTSD, depression and LEC. The associations of BDNF with CSI and its severity suggest that BDNF may be a predictor of suicidal risk, allowing scientists to develop laboratory tools for medical practice in suicide prevention and treatment.

Drug Development for the Treatment of PTSD

The Center, in collaboration with the University of California, Irvine (UCI), established a multi-species methodology for evaluating potential new compounds to treat PTSD. The effort uses a non-mammalian model (zebrafish) for high-throughput rapid screening in conjunction with a long established rodent model. The zebrafish colony, a new species for the USU community, will provide an abundance of potential research opportunities in drug development and beyond. The zebrafish lab has recently begun initial tests of various chemical panels for standardization of profiles within the zebrafish model. In addition to high-throughput embryo testing, the lab has begun ramping-up efforts to perform testing in adult zebrafish which have more than 100 testable characterized behaviors. Once fully established, the lab will begin high-throughput testing and coordinate with its collaborators regarding

future directions for compound screening. Several novel compounds are currently pending testing and successful compounds will then be evaluated in the established rodent model at UCI.

Clinical Research in Neuroscience and Neurobiology

Riluzole Augmentation Treatment for Complicated Combat-Related PTSD

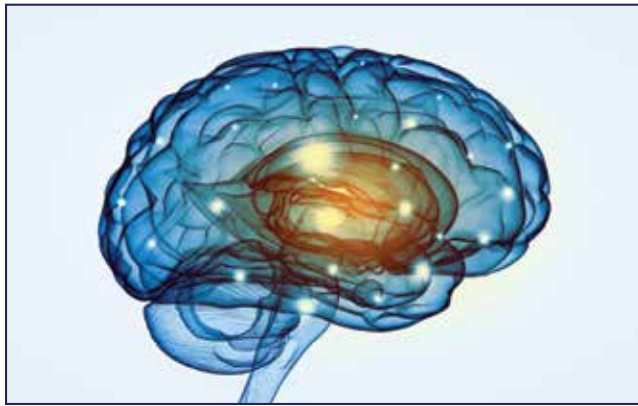
CSTS continues analysis of data collected from 73 participants enrolled in a multi-site clinical trial at WRNMMC and the Syracuse Veterans Affairs Medical Center. This study, funded by the U.S. Army Military and Operational Medical Readiness Program, enrolled participants between 2014 and 2017. The study tested efficacy of riluzole for treatment of combat-related PTSD in veterans who continued to have PTSD symptoms despite ongoing treatment with evidence-based medications. Riluzole modulates the activity of glutamate, a highly prevalent neurotransmitter in the brain. Preclinical research suggests neuroprotective effects of riluzole as well as downregulation of glutamate activity make it a promising addition to current evidence-based medications. This trial compared the addition of riluzole or placebo in a randomized, double-blind trial over eight weeks. Participants reported symptoms of PTSD, depression, anxiety, and quality of life. In addition to psychometric data, investigators collected magnetic resonance spectroscopy concentrations in the amygdala and anterior cingulate cortex before and after treatment as a potential biomarker of illness and treatment response. Preliminary analysis suggests that riluzole offers superior efficacy to placebo in the treatment of hyperarousal symptoms of PTSD (unpublished data), but that it does not show superior efficacy in overall PTSD symptoms. Riluzole was well-tolerated in all study participants, with none having to discontinue the trial due to medication side effects. CSTS Scientists further hypothesize that spectroscopy changes in the amygdala, anterior cingulate cortex and hippocampus will correlate with improvement due to riluzole treatment. Imaging data are still under analysis.

Enhancing Fear Extinction via Angiotensin Type 1 Receptor Inhibition: A Randomized Controlled Trial in Post-traumatic Stress Disorder

CSTS continued its collaboration with the University of California, San Diego as part of a multisite clinical trial testing the efficacy of the blood pressure medication losartan for treatment of PTSD. Losartan is an angiotensin receptor blocker currently FDA approved for treatment of high blood pressure. Growing preclinical evidence points to the role of the renin-angiotensin system in the central nervous system as playing a role in fear memory reconsolidation and suggests that angiotensin receptor blockers like losartan enhance fear extinction in rodent models. CSTS is currently recruiting participants at WRNMMC for this multi-site study. Other study sites include Massachusetts General Hospital, McLean Hospital, and New York University. This trial compares treatment with losartan to placebo as mono-therapy for treatment of PTSD over 10 weeks of treatment. Participants report symptoms of PTSD and depression, as well as side effects of medication, every two weeks. Participants also undergo genetic analysis of the angiotensin converting enzyme (*ACE*) gene as a potential biomarker of treatment response. This clinical trial is currently recruiting participants through 2019.

Nightmare Deconstruction and Reprocessing (NDR) for Treatment of PTSD-related Nightmares

CSTS is conducting a clinical pilot trial of a novel exposure-based psychotherapy for PTSD-related nightmares, Nightmare Deconstruction and Reprocessing (NDR). NDR is an adaptation of Dr. Clara Hill's three-stage cognitive-experiential dream model that specifically targets participants' appraisal of dream content and meaning. The goal of this pilot study is to develop measures and procedures for development of a full-scale clinical trial. We will test a range of potential psychometric, physiologic, and biochemical markers and assess their tolerability and feasibility as well as that of the therapy. This study will measure nightmare and insomnia severity, suicidality, PTSD and depression symptoms as



psychometric outcomes. It will measure genetic and inflammatory biomarkers at various points in treatment as potential biomarkers of treatment response. Finally, we will collect continuous data on heart rate, electrodermal activity, and motion using the Empatica E4 wristband device. Included in this continuous data collection will be ecological momentary assessment to measure variation in PTSD, depression, and anxiety symptoms and daytime functioning throughout the day. This pilot trial will begin recruiting participants in 2019 at WRNMMC with participant recruitment at Naval Hospital Camp Pendleton later in 2019.

The VA National PTSD Brain Bank

The VA National PTSD Brain Bank, which began in 2015, is the first brain tissue repository dedicated to researching the impact of trauma and stress on brain tissue and function. CSTS Scientists direct the Brain Bank's Assessment Core and serve on the Brain Bank's Scientific Advisory Board. This research is designed to identify biomarkers of susceptibility and resilience to trauma and help target new treatments at the cellular level. The Brain Bank enrolls potential donors throughout the nation. The donors receive comprehensive longitudinal assessment via clinical interview and periodic surveillance from the time of enrollment until the time of their death, when their brain tissue is donated to the Brain Bank. The Brain Bank has also developed a protocol for comprehensive post-mortem diagnostic assessment of donors (through medical record review and third party interview) in instances where ante-mortem assessment of PTSD is not possible.

This year the Brain Bank obtained tissue from 26 donors diagnosed with PTSD and 41 persons with no history of PTSD. The Brain Bank includes tissue from nearly 200 donors, half of whom were diagnosed with PTSD. In addition, nearly 80 living persons have enrolled in the longitudinal follow-up registry to serve as future donors. Through CSTS, the Brain Bank continued collaborating with the Lieber Institute for Brain Development and the USU Collaborative Health Initiative Research Program (CHIRP) to perform whole genome sequencing and methylation studies in collaboration with Yale, for the Brain Bank's first core study.

The Brain Bank continues to explore expansion sites. The Assessment Core developed a new standardized record review form insuring that all collection sites render post-mortem diagnosis of PTSD (and comorbid conditions) in a harmonized manner. The form will also facilitate export of relevant diagnostic data in conjunction with ongoing genomic analyses. This year, CSTS Scientists formalized an agreement with the Armed Forces Retirement Home (AFRH) in Washington, DC to allow investigators to regularly inform AFRH residents of opportunities to participate in PTSD research including the VA National PTSD Brain Bank project.

The Brain Indices Study

The goal of this research is to develop reliable and valid predictors of negative outcomes after mild traumatic brain injury (mTBI). Potential predictors include measures of brain structure and function. The research will inform targeted treatments that can be implemented early, and thereby enhance the lives of our wounded warriors and their families. The study was funded by the DoD Congressionally Directed Medical Research Programs (CDMRP) and the Center for Neuroscience and Regenerative Medicine (CNRM). Data were collected in the Brain Assessment Research Laboratory at WRNMMC and Fort Belvoir Community Hospital. This longitudinal study was designed to identify brain measures that predict PTSD and other deleterious outcomes in Service members with mTBI. The assessment battery includes clinical, neuroimaging (structural MRI/DTI), electrophysiological, neurocognitive, and

neurological assessments. The assessments, conducted soon after injury, and three and six months later, included interviews for PTSD, depression, and headache, as well as post-concussive symptoms and overall mental and physical health status. Activities in 2018 included data processing and analysis, and manuscript preparation.

The Chronic Effects of Neurotrauma Consortium Study 1: Observational Study on Late Neurologic Effects of OEF/OIF/OND Combat

This investigation is funded by the DoD CDMRP as part of the multisite TBI Consortium. The goal is the evaluation of the chronic effects and comorbidities of TBI. A battery of physiological, psychological, neurocognitive, occupational, and social functioning tests was given to current and past Service members who sustained TBI in OEF/OIF/OND. They underwent repeated in-person and telephone assessments to track their overall status. CSTS directed the electrophysiological (event-related brain potentials and EEG) component of this study, related to assessment of sensory and cognitive abilities. This cohort will allow an evaluation of the post-TBI prevalence, natural history, and intervention response to chronic symptoms and related comorbidities. The data will allow for analysis of the effect of post-injury time on chronic symptoms, comorbidities, and signs of neurodegeneration or recovery.

Application of Somatosensory Evoked Potentials to the Diagnosis of Traumatic Brain Injury (TBI): A Translational Approach

The goals of this FDA-funded research are to: (a) determine the diagnostic utility of specific EEG biomarkers in Service members with blast-induced TBI based on translational work in mouse models; (b) employ components of the somatosensory evoked potential (SEP) to assess TBI neurosensory effects; and (c) assess correlations between the magnitude of EEG changes and the severity of TBI. The research was designed to shed light on the question of whether SEPs can function as an EEG field-deployable biomarker diagnostic of TBI. Data collection at WRNMMC is expected to commence in early 2019.

RESEARCH ON DISASTERS AND TERRORISM

Florida Department of Health Response to Multiple Hurricanes

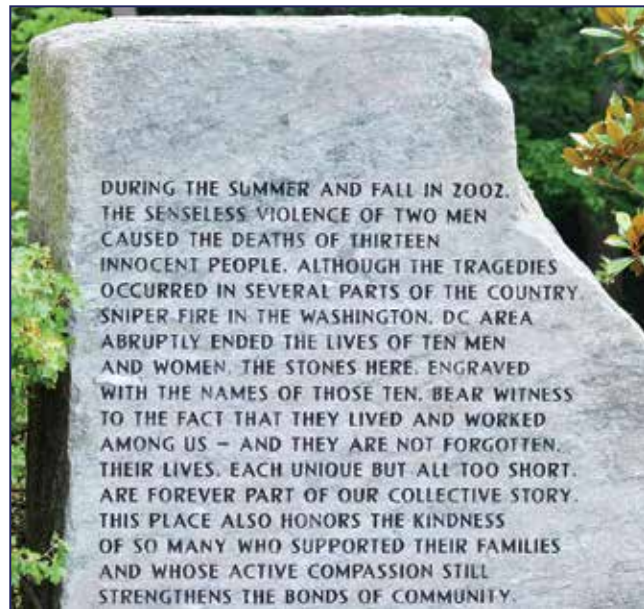
CSTS Scientists continue to examine the risk and protective factors for post-traumatic disorders, psychological distress, and health risk behaviors in civilian and military populations that have been exposed to natural disasters. This work is particularly important in light of the multiple disasters that have occurred within this past year, including the devastating California wildfires and mudslides, and Hurricanes Michael and Florence, each resulting in significant destruction to property, as well as severe injury and death to community residents. During 2018, Center Scientists identified factors that may play a role in recovery from multiple hurricane exposure by examining the psychological and behavioral responses in Florida Department of Health workers who were both first responders to, and were personally affected by, a series of hurricanes that occurred in 2004 and 2005. In particular, CSTS examined the influence of individual perceived collective efficacy on community residents' self-reports of daily distress following the hurricanes, as measured by the CDC Health-Related Quality of Life Healthy Days assessment. Findings indicated that lower perceived collective efficacy was associated with increased risk of PTSD and frequent mental distress (reported as 14 or more mentally unhealthy days within the last 30 days), even after adjusting for individual



and community socio-demographic characteristics, individual injury/damage, and community storm damage. This research suggests the importance of developing strategies that increase neighborhood cohesion and promote resilience. This can be achieved through community-level interventions, which are cost-effective, practical, and may reach individuals who may not seek or have available interventions after a disaster.

Washington, DC Area Sniper Study

Recognizing the increased incidence of terrorist attacks worldwide, the Center continued to focus on the psychological and behavioral impact associated with these traumatic events. The aim of this research is to identify mechanisms that may affect responses, and through these findings, develop actionable recommendations for health care providers and community leadership. This research makes a unique contribution to the understanding of terrorist events and their sequelae by examining data collected from 1,238 community residents during the 2002 Washington, DC area sniper attacks. Recent work has examined the relationships of sniper-related television viewing, identification with the victims of the attacks, and peri-traumatic dissociation on post-traumatic stress symptoms. The findings indicated that higher levels of TV viewing (at least two hours per day) may influence identification and is associated with increased post-traumatic stress symptoms. In addition, CSTS research has found that high amounts of event-related television viewing and decreased perceived safety were related to post-traumatic stress and depressive symptoms. Specifically, higher levels of TV viewing were associated with post-traumatic stress symptoms in individuals who reported both low and high levels of perceived safety, whereas high TV viewing was related to depressive symptoms particularly in those who reported low safety. CSTS is currently examining the role of confidence in law enforcement and perceived safety on changes in behavior during the sniper attacks. Findings indicated that those who were younger, female, and reported lower levels of confidence in law enforcement and lower perceived safety were more



likely to change their routine behaviors in response to the sniper attacks. A better understanding of the interrelationships of these cognitive and behavioral mechanisms have implications for targeted recommendations to help reduce psychological distress and functional impairment in community residents exposed to terrorist events.

Washington Navy Yard Shooting Study

The Center is part of a multi-site study designed to better understand risk and protective factors associated with response efforts following community mass violence. The first phase of the study involved assessment at the sites of five school mass shootings. The second phase focused on six community violence events, including the Washington Navy Yard workplace mass shooting in 2013, to examine the impact of this mass shooting incident. This collaboration leverages an ongoing relationship with Naval Sea Systems Command (NAVSEA) to provide a better understanding of the social and occupational difficulties still impacting personnel following the event. The next steps involve data collection and analysis with a representative sample of personnel and family members impacted by the event. The results will inform public policy on future interventions following mass violence events.

Education and Training

A fundamental aspect of the Center's work is education and training. Center Scientists educate and train USU medical students committed to service in our nation's Army, Air Force, Navy and Public Health Service. The Center educates leaders and health care providers in state, federal, private sector and global settings. In addition, the Center sponsors conferences, seminars, symposia, and forums that have educational and training objectives. The Center advances the field of military and disaster psychiatry through presentations, outreach and training, as well as through participation in conferences, collaborations and workshops throughout the U.S. and international community. The Center also educates and expands knowledge through public health efforts and interventions during and after disasters.

One of the Center's important public health education tools is development and dissemination of educational materials to inform stakeholders including: families, healthcare providers, community and organizational leaders, first responders and public health emergency workers, teaching professionals and policy makers. For more than two decades, the Center has created customized, easy-to-read, highly

actionable, just-in-time educational fact sheets to assist Center stakeholders in managing the adverse effects of disaster events through enhanced preparedness, response, and recovery efforts.

In 2018, the Center provided educational resources to partners throughout the DoD, as well as to other Federal agencies, state and local agencies, professional associations, and others. The Center also responded to many disaster events, including the mass shooting incidents at Stoneman Douglas and Santa Fe High Schools, the Tree of Life Synagogue, the Borderline Bar, and the Capital Gazette; Merrimack Valley gas explosions; the 156th Puerto Rico Air National Guard plane crash; shootings and car terrorism in Toronto, Canada; wildfires in Northern and Southern California; and Hurricanes Florence and Michael, which impacted the Gulf region and East Coast of the United States.

DISASTER RESPONSE AND PUBLIC EDUCATION

Since its inception in 1987, the Center has been providing disaster preparedness and response consultation and education in many forms and in many situations. Center personnel have provided on-the-ground education and consultation to extreme national and global disasters, as well as immediate and long-term online, video and telephonic support to assist response and recovery efforts following a wide range of disaster events.

The Center's Assistant Director serves as Chair of the Disaster Committee for the American Psychiatric Association, the world's largest professional organizing body of psychiatrists. Current and former Center personnel have been sought out for expert guidance on optimizing disaster preparedness and response efforts as a result of the experience and subject-matter expertise obtained while working at the Center.

The following are examples of Center disaster response and education activities in 2018:



Drs. Fullerton and Mash at CSTS exhibit booth.

- As part of his role as a Deputy Commander for a Disaster Medical Assistance Team (DMAT) of the U.S. National Disaster Medical System (NDMS), a Center Scientist was deployed to Fort Walton Beach Medical Center in Florida to assist with medical response operations following Hurricane Michael, and was later deployed to the U.S. Commonwealth of the Northern Mariana Islands to assist with response operations following the devastation caused by Super Typhoon Yutu.
- In response to the catastrophic hurricanes in Florida, Georgia, Virginia, and the Carolinas, CSTS developed and disseminated dedicated website education pages to provide actionable guidance for responders and emergency workers, families, healthcare personnel and community leaders to reduce distress and enhance well-being.
- To aid community leaders in Spanish-speaking communities impacted by the hurricanes in the Gulf of Mexico, the Center disseminated Spanish versions of the most commonly accessed disaster education fact sheets to provide actionable guidance on early interventions following mass trauma, supporting the well-being of children following disasters, managing the psychological effects of exposure to human remains, and resources on grief, stress management and communication.
- The Center worked with the embedded health care team at the U.S. Air Force 480th Intelligence, Surveillance and Reconnaissance Wing at Langley Air Force Base to assess stress and mental health in the intelligence operators managing information from remotely piloted combat aircraft.
- Center Scientists provided educational support to the USU Masters in Public Health Program by delivering two educational seminars on domestic and international disaster behavioral health.
- CSTS partnered with the National Center for Disaster Medicine and Public Health (NCDMPH) to hold a conference titled, “Crisis Leadership Symposium: Promoting Emotional and Mental Well-Being.”

- The Center partnered with the Drug Enforcement Administration (DEA) to provide the lead presentation for a three-day reintegration event for DEA agents (and their spouses) returning from high-threat overseas posts, as well as military deployments in the Middle East.
- For the fourth consecutive year, a Center Scientist was invited to provide disaster psychiatry training for the fourth year psychiatry residents at the University of Maryland/Sheppard Pratt Psychiatry Residency Program.

NEUROSCIENCE MODULE FOR PRE-CLERKSHIP USU MEDICAL STUDENTS

The neuroscience module is led by CSTS Senior Scientists and the USU Department of Anatomy, Physiology, and Genetics. The module teaches medical students the principles of neuroscience through integrated content across a range of disciplines. From this foundation, students learn to recognize, describe, and diagnose common neuroscience-related medical conditions with a focus on effective management of a wide variety of neurologic and psychiatric conditions. Effective, safe and patient-centered clinical skills, including the performance of neurologic and mental status examinations, were developed through simulated patient experiences. Topics related to military medicine, medical history, human context and health service support are integrated throughout the module with the goal of fostering a more robust and well-rounded education for these future military medical officers.

EDUCATION AND TRAINING IN COMBAT AND OPERATIONAL STRESS CONTROL: OPERATION BUSHMASTER

In line with USU’s mission to prepare uniformed health professionals to support the readiness of the U.S. Armed Forces, CSTS Scientists offer training in Combat and Operational Stress Control (COSC) as a core component in military medical education. CSTS Scientists were engaged in curriculum preparation, faculty development, and direct teaching as part of the annual USU medical field training exer-

cise, Operation Bushmaster. Operation Bushmaster challenged senior medical and graduate nursing students to operate an operational medical unit in a complex battlefield simulation over four days. Students evaluated and treated a continuous stream of battlefield casualties and non-battle injuries, and conducted public health and health outreach activities while on a simulated combat deployment. Evaluation and treatment of combat and operational stress reactions was a core skill taught and evaluated as part of the exercise. CSTS faculty collaborate with the psychiatry residency programs of the National Capital Consortium, the San Antonio Uniformed Services Health Education Consortium, and the Naval Medical Center Portsmouth to provide an opportunity for resident physicians to develop their teaching skills and understanding of COSC as adjunct faculty.

UPCOMING TEXTBOOK ON PTSD

Center Scientists are finalizing work on the American Psychiatric Association's textbook on PTSD. This textbook pulls together experts from across the field of PTSD and trauma with the goal of creating an expansive and engaging reference on this important topic. Slated for publication in late 2019, the textbook covers a wide spectrum of topics from basic diagnostics and neurobiology to more specialized areas such as cultural considerations and working with special populations.

EDUCATIONAL CONFERENCES

The Center sponsored two educational conferences in 2018: the 13th Annual Amygdala, Stress and PTSD Conference, and the Forum on Health and National Security.

Amygdala, Stress and PTSD Conference

The Amygdala, Stress and PTSD Conference is an annual international conference sponsored by the Center based on the collaboration of the USU Department of Psychiatry, USU Neuroscience Program, USU Department of Family Medicine, and the WRNMMC Department of Psychiatry. In 2018, the



Center presented the "13th Annual Amygdala, Stress and PTSD Conference: The Sequelae of Trauma." With more than 300 registrants, this conference brought together scientists, clinicians and policy makers for a day of working towards solving the biological basis of stress, fear and PTSD. Nationally renowned speakers came from leading institutions in Canada and across the U.S. including the University of Western Ontario, Yale University, Columbia University, and Cornell University. The speakers presented and discussed topics such as complicated grief, PTSD and addiction, and understanding trauma in a cultural context. In addition to the conference, the Center partnered with the *Journal of Neuroscience Research* for a special mini-issue based on the conference presentations.

Forum on Health and National Security

In 2018, CSTS co-sponsored the "Forum on Health and National Security: Ethical Use of Big Data for Healthy Communities and a Strong Nation." The forum brought together 20 interdisciplinary experts in science, engineering, and healthcare from DoD, the Veterans Administration, the National Science Foundation, private sector entities and a number of universities including the University of North Carolina, Emory University, Georgia Tech, Meharry Medical College and Spelman College. The forum was held to develop informed recommendations for the ethical implementation of research involving the collection and analysis of big data as well as the



development and use of predictive algorithms. The findings and recommendations will be used to guide future studies and develop recommendations for public and private sector research using big data.

TRAINING TO SUPPORT RESEARCH

CSTS educates and trains its own staff, including research support staff such as Research Assistants (RAs). RAs play an important role in supporting research at CSTS, and are provided with opportunities to learn by working closely with CSTS Scientists. The RAs contribute to Center research in many ways including conducting literature searches, data collection, data entry, and writing summary reports of meetings. Skills the RAs develop at CSTS include developing slides and posters for research presentations, and presenting complicated findings in an understandable way to professionals as well as the general public. In addition, RAs are offered professional development opportunities including attending and presenting posters at professional conferences, and assisting with manuscript preparation for publication in peer-reviewed scientific journals. Many RAs move on to further their education by pursuing advanced degrees. Others move on to careers in research and related fields. CSTS RAs have furthered their education at institutions including Yale, Notre Dame, Johns Hopkins, Duke, Columbia, Georgetown, London School of Hygiene and Tropical Medicine, and USU. Opportunities RAs have pursued following their experience at CSTS have included:

- PhD programs in psychology and related fields
- Medical school
- Law school

- Master degree programs in psychology, counseling, public health and social work
- Training positions at NIMH
- Careers with the FBI

DISSEMINATION AND IMPLEMENTATION OF HEALTH AND RESEARCH KNOWLEDGE

Fact Sheets

Fact sheets are a long-standing communication tool of CSTS. Fact sheets are easy to understand, topic-focused, actionable, education resources developed using expert



knowledge to communicate essential behavioral health content on difficult and/or crisis-related issues. Fact sheets address the needs of a broad range of partners and stakeholders, including health care providers,

first responders and emergency workers, family members, community leaders, and policy makers. CSTS fact sheets, which are developed, updated and maintained in an online repository, address a wide range of issues pertaining to disaster preparedness and response, risk and crisis communication, as well as health risk education. CSTS fact sheets provide readers with resources tailored to the unique aspects of each disaster event and disaster community. The Center develops, updates and rapidly disseminates fact sheets, in real time, following major disasters and traumatic events such as community violence, terrorism and bioterrorism, and public health threats.

Website

A central tool the Center uses to further the goal of disseminating relevant and timely information to a wide range of stakeholders is the CSTS website



(www.CSTSONline.org). Throughout the year, CSTS personnel continually added content and made content more accessible. Material available on the website includes summaries of current research activities, publication citations, newsletters, conference reports, and a searchable repository of our disaster mental health education fact sheets. The website includes a “What’s New” section to highlight recent disaster education materials, research initiatives, publications, conference summaries and announcements of upcoming events. In 2018, the

CSTS website was used by an average of 1,884 persons per month for a total of 22,613 users over the calendar year. That represents a 53% increase in use as compared to last year. More importantly, more than three-quarters (78%) of the website visitors in 2018 were new users. Most of the website visitors (82%) were from the U.S., but people from a total of 136 countries visited the website in 2018 (14 more countries than in 2017). Aside from the U.S., the countries with the most users were Canada, Australia, France and India.

Social Media

In 2018, the Center continued to grow its online presence through the use of social media. These social media resources allow for the timely dissemination of relevant content to our partners and the public. CSTS Twitter followers increased by 59% and CSTS Facebook followers increased by 27% in the past year. The Center encourages people to visit and follow CSTS postings via Twitter and Facebook to stay up-to-date on new CSTS activities and publications. “Like” CSTS on Facebook at Center for the Study of Traumatic Stress and follow CSTS on Twitter @CSTS_USU.



Amygdala Conference presentation.



CSTS staff supporting Amygdala Conference.

Consultation

Consultation has been a central function of CSTS since its founding and a key mechanism through which CSTS staff share the outcomes of their research and utilize their deep and broad experience. In addition, consultation is a valuable mechanism to assure that CSTS staff are aware of, and responsive to, those who face challenges and opportunities related to trauma of many types. The Center has developed partnerships with, and provides consultation to, many agencies and organizations throughout the DoD and other Federal agencies, as well as with state, local and national agencies, professional associations, and international organizations. Our consultative partnerships include a wide variety of partner organizations both inside and outside government, and internationally. At times, our interactions are based on longstanding organizational linkages, while other times our consultation is sought by new partners. The following are examples of some of our long-standing consultations as well as some new consultations in 2018.

NATIONAL ASSOCIATION OF STATE MENTAL HEALTH PROGRAM DIRECTORS (NASMHPD)

For more than a decade, CSTS has had a relationship with NASMHPD, a membership organization representing state mental health authorities (Commissioners) responsible for preparedness, response, and recovery from large and small scale disasters. CSTS assists the Commissioners in addressing the many challenges inherent in those systems including military families and veterans served by the state public mental health systems. CSTS and NASMHPD leadership were in frequent contact throughout 2018 to address information on disaster response. The Center provided unsolicited general and targeted public information to NASMHPD for distribution to disaster impacted states. In addition, NASMHPD requested specialized information and consultation from CSTS regarding individual events. The Center's

relationship with NASMHPD fosters CSTS relationships with individual states. For example, at the invitation of the Missouri Department of Mental Health (MODMH), CSTS leadership facilitated a Disaster Summit that focused on training disaster responders following 2018 events including floods, tornadoes, and civil unrest. Also in 2018, a CSTS Scientist was asked to serve on the State of Maryland's Medical Reserve Corps' advisory council which provides strategic direction for the state's Medical Reserve Corps.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (DHHS)

DHHS disaster and trauma responsibilities overlap considerably with the activities of CSTS. The primary partners of the Center at DHHS are the Assistant Secretary for Preparedness and Response (ASPR) and the Substance Abuse and Mental Health Services Administration (SAMHSA).

Assistant Secretary for Preparedness and Response (ASPR)

CSTS communicated with ASPR staff and leadership on a regular basis to share information. In 2018, a CSTS Associate Director was an invited contributor to the DHHS-sponsored National Summit on Bio-incident Recovery titled, "What the Country's Thought Leaders See as the Top Priorities for Developing Guidance to Help Affected Communities Recover." The summit convened 50 leaders in a day-long conference that resulted in recommendations regarding strategies, opportunities, and challenges related to community-level health.

Substance Abuse and Mental Health Services Administration (SAMHSA)

SAMHSA is one of the oldest CSTS partners, going back to SAMHSA's founding in 1992. SAMHSA is the lead federal agency responsible for supporting and improving national mental health services.

CSTS regularly provided emerging evidence-based articles and materials to assist SAMHSA in staying current with information and guidance. In 2018, a Center Associate Director continued to serve on the Disaster Distress Helpline (DDH) Steering Committee to provide guidance, feedback and peer-review of funding requests. CSTS provided materials to DDH which were incorporated into their Best Practices for distribution across their network of service providers. The CSTS Assistant Director was invited to serve as a Subject Matter Expert on SAMHSA's "Disaster Behavioral Health Expert Panel" meeting that brought together 18 national interagency and private sector experts to examine the current state of research in the field of disaster behavioral health. A CSTS Senior Scientist provided consultation to SAMHSA regarding the possibility of a new DHHS survey of mental and addictive disorders to address major policy issues. In addition, CSTS participated in an Expert Panel on Child, Adolescent, and Transition Aged Youth Trauma and Serious Emotional Disturbance/Serious Mental Illness at a conference sponsored by SAMHSA's Center for Mental Health Services.

THE NATIONAL CENTER FOR DISASTER MEDICINE AND PUBLIC HEALTH (NCDMPH)

CSTS maintained a strong and growing partnership with NCDMPH in 2018 through several important collaborations. CSTS, along with the NCDMPH and the USU Leadership Education and Development Program, sponsored a symposium at USU entitled "Crisis Leadership Symposium: Promoting Emotional Well-Being" for a diverse audience that included military, government, civilian, and other stakeholders. The keynote speaker was Admiral Thad Allen (ret.), former USCG Commandant, and the panels included leaders with significant field experience in disaster response as well as program, policy and academic leaders. A CSTS Associate Director was featured on the NCDMPH's 2018 podcast, "Disaster Dialogues: Perspectives from the Field." At the request of CSTS partners at NCDMPH, CSTS staff presented a seminar entitled,

"Critical Concepts in Disaster Behavioral Health" to interdisciplinary MPH students. As in prior years, two members of the Center's leadership team served as Associate Editors for the journal *Disaster Medicine and Public Health Preparedness*, a publication based in NCDMPH.

NATIONAL CHILD TRAUMATIC STRESS NETWORK (NCTSN)

The Center continued to work with NCTSN in partnering with the Network's Military and Veteran Families Program in their efforts to develop and implement trauma-informed, evidenced-based interventions and approaches to military children and families. CSTS also served as a NCTSN Treatment and Services Adaptation Center (Category II site) by providing expertise on specific types of traumatic events experienced by military families, as well as programs and providers that specialize in treatment and services for military communities.

MILITARY CHILD EDUCATION COALITION (MCEC)

MCEC's mission is to support the educational, developmental, and social-emotional needs of military-connected children, worldwide. In 2018, a CSTS Senior Scientist served on MCEC's Scientific Advisory Board and, in partnership with NCTSN, CSTS sponsored a pre-conference workshop entitled, "Building Resilient Communities Facing Real Problems" at MCEC's annual meeting. This event brought together researchers and practitioners with expertise in youth substance use, bullying, and suicidal behavior to discuss approaches to problems faced by military children and families.

NATIONAL ACADEMIES OF SCIENCES (NAS)

A CSTS Scientist participated in the planning and implementation of a 2018 workshop at the National Academies of Sciences, Engineering, and Medicine titled, "Strategies, Interventions and Policies for Health Promotion, High Risk Behavior

Prevention and Increased Performance of the DHS Law Enforcement Workforce.” In addition, A CSTS Associate Director represented the Center at the National Academies of Sciences, Engineering and Medicine Committee on Military Family Well-being.

THE AMERICAN PSYCHIATRIC ASSOCIATION (APA)

CSTS worked with the APA and other national medical associations to educate and train health professionals on disaster mental health. CSTS personnel helped initiate the APA’s efforts in disaster psychiatry by establishing its Committee on Disaster Psychiatry in 1992, and has remained actively involved ever since. In 2018, CSTS Scientists provided formal and informal disaster consultation and education resources to APA District Branches in response a wide range of disaster events, including mass violence and terrorist events in the U.S. and Canada, as well as climate-related disasters, such as hurricanes and wildfires. CSTS provided consultation services including guidance and resources on enhancing preparedness, response and recovery following disasters. CSTS education fact sheets served as an important resource for District Branches to assist them in rapidly disseminating critical, time-sensitive, actionable information to optimize the well-being of patients and other community members.

At the APA Annual Meeting, CSTS Scientists presented at a sold-out half-day course on disaster mental health, addressing fundamental issues such as psychological and behavioral responses to disasters, vulnerable populations, and evidence-based early interventions to reduce distress and enhance well-being. The audience of 54 psychiatrists and other mental health professionals from across the globe took part in the course, which offered a blend of didactic learning, interactive polling, and case-based small group exercises to reinforce content.

In addition, a Center Senior Scientist collaborated with colleagues from WRNMMC, Yale University, and the Veterans Health Administration to present two workshops at the APA Annual Meeting. The workshops presented communication strategies for physicians to better understand risk-decision mak-

ing by their patients concerning firearms ownership and storage practices and to help move their patients toward safer alternatives

The Center Assistant Director served as Chair of APA’s Disaster Committee. In this role, he oversaw the work of a newly formed Caucus on Climate Change and Mental Health. The Caucus delivered presentations and engaged healthcare organization partners to enhance public health education about the adverse effects and mitigation strategies with respect to climate-related disasters.

GLOBAL HEALTH



The reach of CSTS consultation activities extends beyond our nation’s borders to the international community. The following are examples of CSTS international activities in 2018.

Global Health Engagement

The Global Health Engagement focus at USU continued to evolve and solidify during 2018 with development of the USU Center for Global Health Engagement (CGHE). During 2018, the Center regularly participated in briefings by CGHE for all relevant USU stakeholders.

International Outreach

The Center Director participated in the International Ministerial (5-Eyes) Centres of Excellence Conference on Veterans’ Issues in Sydney, Australia. The conference involved the Australian Government Minister for Veterans’ Affairs and delegations from Canada, New Zealand, the United Kingdom, and the United States who discussed veterans’ mental health issues and transition from military to civilian life. The CSTS Director also presented the work CSTS has been doing during the “Innovative Research Consortium,” an international working group on military and veteran health.

The Center Director participated in a NATO Advanced Research Workshop meeting in Odessa,

Ukraine and gave the keynote presentation titled, “Essential Issues on Terrorism.” Participants included experts from several NATO countries and scientific organizations. The purpose of the workshop was to develop evidenced-based guidelines for treating terrorism-induced stress and focused on bridging clinical practice and non-scientific mechanisms underpinning long-lasting responses to terrorism-induced stress.

A CSTS Scientist participated in the NATO Research Task Group Meeting in Amsterdam, Netherlands. Participants included representatives from other NATO countries and scientific organizations. Virtual reality, simulation, and serious gaming were reviewed as part of a three-year effort to understand the latest technologies available for the treatment of military-relevant mental health conditions.

The NATO Leveraging Technology in Military Mental Health Research Task Group held a meeting on the topic of “Big Data and Machine Learning” at the Canadian Embassy in Washington, DC. This international meeting, which was hosted by a Center Senior Scientist and sponsored in part by the Center, brought together panelists and presenters from Canada, the Netherlands, Australia, and the United States to discuss the potential value and opportunities offered by big data and machine learning. Panelists and observers were given presentations on big data, as well as how machine learning and big data



CSTS group at the Canadian Embassy in Washington, DC for the NATO meeting on Big Data and Machine Learning.

are used in suicide prevention interventions, patient diagnoses, virtual reality, digital phenotyping, protein biomarkers, and neuroimaging. Presenters at the meeting included the CSTS Director and several CSTS Scientists.

A CSTS Associate Director continues ongoing consultation and collaboration with Canada’s Earth Sciences Sector, Natural Resources Canada. Consultation and collaboration involved using communications by seismologists to incorporate psychosocial considerations in their communications following earthquakes.

A CSTS Senior Scientist presented at a meeting at Columbia University of the World Psychiatric Association Section on Epidemiology and Public Health titled, “Emerging mental health challenges across the globe.” The presentation was titled, “Epidemiology links to nosology and mental health policy: Historic Perspective.”

A CSTS Scientist participated in a conference of the Association of Medical Educators of Europe (AMEE) in Basel, Switzerland. He presented, “Entrustable Professional Activities in Undergraduate Medical Education” that included a review on the topic, the limitations of this new assessment modality, and areas for future research. He also ran a workshop titled, “I teach therefore I Am” that focused on educator identity and how that can shift when transitioning to online teaching. He helped education leaders identify and leverage the influence that online teaching has on educator identity.

A CSTS Scientist directed a five-day course on Disaster Mental Health in Mauritius, Africa and consulted with leaders of Mauritius’ Disaster Response Program. The course was part of the DoD’s Defense Institute on Medical Operations (DIMO) program. He re-designed the course for the specific needs of Mauritius and helped with development of their mental health disaster response plan. The course was a success and has been requested by four other African nations for 2019.

Extreme Weather-Related Disasters and Mental Health

Center Scientists developed the APA’s first continuing education module on, “Climate Change and

Disaster Mental Health.” This one-hour interactive online learning activity provided content for health-care and other professionals to better understand psychological and behavioral effects, vulnerable populations, evidence-based interventions, and preparedness measures with respect to climate-related disasters. In 2018, a Center Scientist was invited

to speak on the panel, “Is Climate Change a Threat to Human Health?” at the Annual Conference of the Association of Health Care Journalists in Phoenix, AZ. He presented, “Climate-Related Disasters: Impact on Public Mental Health and How the Media Can Help” to health care journalists.

THE USS NAIFEH

CSTS Leadership recently learned that a U.S. Navy ship was named after a relative of Dr. James A. Naifeh, a Center Scientist and Research Assistant Professor in the USU Department of Psychiatry. We asked Dr. Naifeh a few questions about the story behind the naming of this ship.



Dr. James A. Naifeh.

What is the story of the Navy ship named after your relative?

The USS Naifeh was a John C. Butler-class destroyer escort named in honor of Navy Lieutenant, Junior Grade, Alfred Naifeh. Lt. Naifeh was serving aboard the destroyer USS Meredith when it sank during the Battle of the Solomons in World War II. For two days and nights, Lt. Naifeh swam back and forth among the life rafts, fighting off shark attacks, in order to render aid to his wounded and exhausted shipmates. As a result of his continuous efforts, Lt. Naifeh was eventually overcome by exhaustion and died on October 16, 1942. For his devotion to duty and courage, Lt. Naifeh was posthumously awarded the Navy and Marine Corps Medal and a Purple Heart. The USS Naifeh was commissioned on July 4, 1944.

What is your relationship to Alfred Naifeh?

This remains somewhat of a mystery that my father and I are eager to solve. A framed photograph of the USS Naifeh always hung in the hallway at my grandmother’s home, but our exact relationship to Alfred Naifeh has been lost over time. He is a distant relative, perhaps a second cousin of my paternal grandfather. We know that Alfred Naifeh’s family emigrated from Marjeyoun, Lebanon, the same small town from

which my great grandparents emigrated in the early twentieth century. The population of Marjeyoun is small enough that it is safe to assume all Naifehs who emigrated from there are related. In addition, Alfred Naifeh was born in Covington, Tennessee. My grandfather was born in Hickman, Kentucky, about 90 miles away, and he often spoke of his relatives in Covington, Tennessee.

What was your reaction to learning about the USS Naifeh?

The story of Alfred Naifeh and the ship that bears my family’s name has always been a source of pride. Lt. Naifeh’s courage and devotion to his shipmates are awe-inspiring. My grandfather, an Army Staff Sergeant, and my grandmother’s four brothers, were also among the many second-generation Lebanese-American immigrants who fought for the United States in World War II. I am deeply appreciative of their service and sacrifice.



The USS Naifeh.

Publications

(Names in bold text are CSTS personnel)

JOURNAL ARTICLES

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BOOK CHAPTERS

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- Benedek, D. M.**, & **Wynn, G. H.** (2018). Pharmacologic treatment of adults with

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- Stoddard, F. J., **Benedek, D.**, Milad, M., & **Ursano, R.** (Eds.). (2018). *Trauma- and stressor-related disorders* (Primer on). New York, NY: Oxford University Press



Presentations, Briefings, Interviews and Awards

(The names in bold text are CSTS personnel.)

PRESENTATIONS

Climate-related disasters: Impact on public mental health and how the media can help.

Morganstein, J. C. Presented at the Annual Conference of the Association of Health Care Journalists, Phoenix, AZ, April 2018

Daily influence of sleep duration on post-traumatic stress symptoms in individuals with and without post-traumatic stress disorder. **Wang, J., Ursano, R. J., Biggs, Q. M., Krantz, D. S., Carr, R. B., Wynn, G. H., Probe Adams, D., Dacuyan, N. M., & Fullerton, C. S.** Presented at the 13th Annual Amygdala, Stress and PTSD Conference: The Sequela of Trauma, Bethesda, MD, April 2018

Daily variation in post-traumatic stress symptoms in individuals with and without post-traumatic stress disorder. **Biggs, Q. M., Ursano, R. J., Wang, J., Krantz, D. S., Carr, R. B., Wynn, G. H., Probe Adams, D., Dacuyan, N. M., & Fullerton, C. S.** Presented at the 13th Annual Amygdala, Stress and PTSD Conference: The Sequela of Trauma, Bethesda, MD, April 2018

Recent stressful experiences and resilience among US Army soldiers at risk for suicide. **Dempsey, C. L., Benedek, D. M., Nock, M. K., Ng, T. H., Riggs, C., Aliaga, P., Caulfield, N., DeStefano, S. & Ursano, R. J.** Presented at the 13th Annual Amygdala, Stress and PTSD Conference: The Sequela of Trauma, Bethesda, MD, April 2018

Family risk factors and child neglect type. **Ogle, C. M., Zhou, J., Burris, A. L., Fisher, J. E., & Cozza, S. J.** Presented at the 13th Annual Amygdala, Stress and PTSD Conference: The Sequela of Trauma, Bethesda, MD, April 2018

Clinical response profiles in bereaved family members fourteen years after the September 11th terrorist attacks. **Fisher, J. E., Chen, S.,**

Zhou, J., Churan, A., Fetchet, M., Fullerton, Ursano, R. J., & Cozza, S. J. Presented at the 13th Annual Amygdala, Stress and PTSD Conference: The Sequela of Trauma, Bethesda, MD, April 2018

Prevalence of psychiatric conditions in bereaved military service widows: A longitudinal case controlled study. **Hefner, K., Fisher, J., Ogle, C., Stephens, T., Zhou, J., Lee, A., Krantz, D., Fullerton, C. S., Ursano, R. J., & Cozza, S. J.** Presented at the 13th Annual Amygdala, Stress and PTSD Conference: The Sequela of Trauma, Bethesda, MD, April 2018

PTSD, Suicide, TBI... DSM and other Trauma Disorders. **Ursano, R. J.** Presented at the International Conference on Dutch Veterans Health Care, Amsterdam, Netherlands, April 2018

Complicated grief and depression differentiate types of cognitive failures in bereaved family members. **Fisher, J., Zhou, J., Liu, A., Ali, B., Fullerton, C. S., Ursano, R. J., & Cozza, S. J.** Presented at the 13th Annual Amygdala, Stress and PTSD Conference: The Sequela of Trauma, Bethesda, MD, April 2018

Recent stressful experiences and resilience among U.S. Army soldiers at risk for suicide. **Dempsey, C. L., Benedek, D. M., Nock, M. K., Ng, T. H., Riggs, C., Aliaga, P., Caulfield, N., DeStefano, S. & Ursano, R. J.** Presented at the 38th Annual Anxiety and Depression Conference, Washington, DC, April 2018

Disaster psychiatry review and updates: Terrorist mass killing, climate change, and ebola. **Ursano, R. J., Morganstein, J. C., West, J. C.** Presented at the annual meeting of the American Psychiatric Association Committee on Psychiatric Dimensions of Disasters, New York City, NY, May 2018

- Ethical issues for psychiatrists in the treatment of transgender persons. **Howe, E., Benedek, D.** Presented at the American Psychiatric Association (APA) Annual Meeting in New York City, NY, May 2018
- Patients and personal firearms: Approaches to the physician-patient conversation to reduce risk. **West, J. C.** Presentation given at the American Psychiatric Association (APA) Annual Meeting in New York City, NY, May 2018
- Improving suicide risk management skills. **West, J. C.** American Psychiatric Association (APA) Annual Meeting in New York City, NY, May 2018
- Should I stay or should I go: Decision-making on Active duty service extension. **Benedek, D.** Presented at the Society of Uniformed Services Psychiatrists Tri-Service meeting in New York City, NY, May 2018
- Epidemiology links to nosology and mental health policy: Historic perspective. **Regier, D. A.** Presented at the meeting of the World Psychiatric Association Section on Epidemiology and Public Health, New York City, NY, May 2018
- Patients and gun safety: What medical students (and psychiatrists) need to know. Goldenberg, M. N., & **West, J. C.** Presented at the annual Meeting of the Association of Directors of Medical Student Education in Psychiatry (ADMSEP) in Minneapolis, MN, June 2018
- Does pretesting impact study behaviors and subject examination scores in clerkship? **West, J. C., Dudek, M., Gilliland, W. R., & Roman, B. J.** Presented at the Annual Meeting of the Association of Directors of Medical Student Education in Psychiatry (ADMSEP), Minneapolis, MN, June 2018
- Therapists' needs and how they meet them. **Spangler, P. T.** Presented at the 49th Annual International Meeting of the Society for Psychotherapy Research in Amsterdam, Netherlands, July 2018
- Psychiatric dimensions of disaster: Individual and community responses. **West, J. C.** Presented at the 116th Annual Convention and Scientific Assembly of the National Medical Association in Orlando, FL, August 2018
- Association of N-Acetylaspartate concentration in anterior cingulate and amygdala with treatment response to Riluzole augmentation for posttraumatic stress disorder. **West, J. C., Spangler, P. T., Cole, J., Dempsey, C. L., Andrews-Shigaki, B., Kohls, G. H., & Benedek, D. M.** Presented at the Military Health System Research Symposium (MHSRS), Orlando, FL, August 2018
- Riluzole for PTSD: Efficacy of glutamatergic modulator as augmentation treatment for combat-related PTSD. **Dempsey, C. L.** Presented at the Military Health System Research Symposium (MHSRS), Orlando, FL, August 2018
- Essential Issues on Terrorism. **Ursano, R. J.** Presented at the NATO Advanced Research Workshop Meeting, Odessa, Ukraine, September 2018
- Entrustable professional activities in undergraduate medical education. **Meyer, E.G.** Presented at the Association of Medical Educators of Europe (AMEE) conference, Basel, Switzerland, September 2018
- The protective effect of social and support networks among U.S. Army soldiers at risk for suicide. **Dempsey, C. L., Benedek, D. M., Nock, M. K., Ng, T. H., Riggs, C., Brent, D. A., Heeringa, S. G., Kessler, R. C., Stein, M. B., & Ursano, R. J.** Presented at the USU Centers Forum, Bethesda, MD, September 2018
- Daily variation in post-traumatic stress symptoms in individuals with and without post-traumatic stress disorder. **Biggs, Q. M., Ursano, R. J., Wang, J., Krantz, D. S., Carr, R. B., Wynn, G. H., Probe Adams, D., Dacuyan, N, M., & Fullerton, C. S.** Presented at the USU Centers Forum, Bethesda, MD, September 2018
- Firearm accessibility and suicide: Results from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). **Dempsey, C. L., Benedek, D. M., Zuromski, K. L., Riggs, C., Ng, T. H., Nock, M. K., & Ursano, R. J.** Presented at the Department of Psychiatry Meeting, Bethesda, MD, October 2018
- Traumatic stress: Education for trauma informed care... from Macro to micro, personalized

- medicine to public health. **Ursano, R. J., & Benedek, D. M.** Presented at the National Academies' Global Forum on Innovation in Health Professional Education meeting, Washington, DC, November 2018
- PTSD aka 'Soldier's Heart' and other (non PTSD) trauma related disorders and dimensions. **Ursano, R. J.** Presented at the NHLBI Workshop, "The Cardiovascular Consequences of Post-Traumatic Stress Disorder, Bethesda, MD, November 2018
- Association of N-Acetylaspartate concentration in anterior cingulate and amygdala with treatment response to Riluzole augmentation for posttraumatic stress disorder. **Spangler, P., West, J.,** Cole, J., Andrews-Shigaki, B., Kohls, G., & **Benedek, D.** Presented at the 34th Annual Meeting of the International Society for Traumatic Stress Studies (ISTSS), Washington, DC, November 2018
- Daily influence of sleep duration on posttraumatic stress symptoms in individuals with and without post-traumatic stress disorder. **Wang, J., Ursano, R. J., Biggs, Q. M., Krantz, D. S.,** Carr, R. B., **Wynn, G. H., Probe, D., Dacuyan, N. M., & Fullerton, C. S.** Presented at the 34th Annual Meeting of the International Society for Traumatic Stress Studies (ISTSS), Washington, DC, November 2018
- Daily variation in posttraumatic stress symptoms (PTSS) in individuals with and without posttraumatic stress disorder. **Biggs, Q. M., Ursano, R. J., Wang, J., Krantz, D. S.,** Carr, R. B., **Wynn, G. H., Probe, D., Dacuyan, N. M., & Fullerton, C. S.** Presented at the 34th Annual Meeting of the International Society for Traumatic Stress Studies (ISTSS), Washington, DC, November 2018
- Effects of media coverage on traumatic bereavement due to 9/11. **Fisher, J. E., Chen, S., Zhou, J.,** Fetchet, M. & **Cozza, S. J.** Presented at the 34th Annual Meeting of the International Society for Traumatic Stress Studies (ISTSS), Washington, DC, November 2018
- Firearm accessibility and suicide: Results from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). **Dempsey, C. L., Benedek, D. M.,** Zuromski, K. L., Nock, M. K., **Riggs, C., Ng, T. H., Exley, S. L., Broshek, C. E., & Ursano, R. J.** Presented at the 34th Annual Meeting of the International Society for Traumatic Stress Studies (ISTSS), Washington, DC, November 2018
- Riluzole for PTSD: Efficacy of a glutamatergic modulator as augmentation treatment for combat-related posttraumatic stress disorder. **West, J., Spangler, P., Dempsey, C.,** Possemato, K., McKenzie, S., & **Benedek, D.** Presented at the 34th Annual Meeting of the International Society for Traumatic Stress Studies (ISTSS), Washington, DC, November 2018
- Sniper-related television viewing, perceived safety, social support, and psychological responses following active shooter events. **Fullerton, C. S., Mash, H. B. H., Morganstein, J. C., & Ursano, R. J.** Presented at the 34th Annual Meeting of the International Society for Traumatic Stress Studies (ISTSS) in Washington, DC, November 2018
- Testing criteria for a persistent grief disorder in a traumatically bereaved sample. **Cozza, S. J., Fisher, J. E., Zhou, J.,** Mauro, C., Simon, N. & Shear, M. K. Presented at the 34th Annual Meeting of the International Society for Traumatic Stress Studies (ISTSS), Washington, DC, November 2018
- Mental health and substance abuse among those who died by suicide and tested positive for opioids. **Stokes, C. M.,** Warfield, S. C., & **Bossarte, R. M.** Presented at the 2018 American Public Health Association Conference, San Diego, CA, November 2018
- Adverse childhood experienced and mental health conditions among veterans. Warfield, S.C., Blosnich, J., **Stokes, C. M.,** Barth, S., & **Bossarte R. M.** Presented at the 2018 American Public Health Association Conference, San Diego, CA, November 2018
- Formative research to inform the design of suicide prevention messaging targeting U.S. veterans in midlife. Karras, E., **Stokes, C. M.,** Warfield, S. C., Barth, S., & **Bossarte, R. M.** Presented at the 2018 American Public Health Association

Conference, San Diego, CA, November 2018
Daily variation in posttraumatic stress symptoms in individuals with and without posttraumatic stress disorder. **Biggs, Q. M., Ursano, R. J., Wang, J., Krantz, D. S., Carr, R. B., Wynn, G. H., Probe Adams, D., Dacuyan, N. M., & Fullerton, C. S.** Presented at the Neuroscience 28th Annual Open House at USU, Bethesda, MD, December 2018

Influence of number of awakenings during the previous 1-3 nights on posttraumatic stress symptoms among individuals with PTSD. **Wang, J., Ursano, R. J., Biggs, Q. M., Krantz, D. S., Wynn, G. H., Carr, R. B., Gover-Chamlou, A., Martinez, S., Pokorny, K., Stephens, T. B., & Fullerton, C. S.** Presented at the Neuroscience 28th Annual Open House at USU, Bethesda, MD, December 2018

BRIEFINGS/INTERVIEWS

- Dr. Flynn, CSTS Associate Director for Health Systems, was featured on the National Center for Disaster Medicine's podcast "Disaster Dialogues: Perspectives from the Field." In the podcast, Dr. Flynn discussed his long career in disaster preparedness and response, and identified key changes and current challenges in the field of disaster behavioral health. The podcast can be found at <https://soundcloud.com/hjfmilmed>.
- Dr. Wynn made a Grand Rounds presentation for the Carolina Health Partners, the largest provider of mental healthcare in Charlotte, NC.
- Dr. Ursano was interviewed by the *The New York Times* for an article titled "A Guide to Dealing with Trauma through Art." The story is about how a commuter, who witnessed a mass shooting on the Long Island Railroad (6 passengers died and 19 were wounded), used art as a recovery mechanism to process the tragedy and overcome his fears and trauma.
- Dr. S. J. Cozza presented a progress update on the Stepping Forward in Grief (SFG) research project to the Military Operational Medicine Research Program (MOMRP) at Ft. Detrick, MD. MOMRP was pleased that the Randomized

Controlled Trial (RCT) has begun and was impressed by the enrollment progress so far.

- CAPT West gave a presentation on the Riluzole for PTSD Study to MOMRP at their Interim Progress Review (IPR) at Ft Detrick, MD. Dr. West shared preliminary results, heard presentations from other investigators on biomarkers for PTSD, and received feedback on progress from a panel of experts convened to review our work on behalf of MOMRP.
- Drs. Morganstein and West met with the Surgeon General of Singapore and his colleagues to share current education, consultation, training and research activities of CSTS and learn more about the Singapore military and issues of concern to their personnel and leadership regarding psychological health and resilience.
- Dr. Ursano was interviewed about veterans and suicide by Dr. Charles Marmar for the "Doctor Radio" show on SiriusXM powered by NYU Langone Medical Center. Dr. Marmar is the host of the segment of the show called "Psychiatry."
- Dr. Ursano was in U.S. Medicine in reference to the CSTS/STARRS study on Suicide Attempts Among those with No Mental Health Diagnosis.
- An article written by Stars and Stripes featured the Stepping Forward in Grief Study. <https://www.stripes.com/lifestyle/new-study-aims-to-help-military-families-grieve-1.546485>

AWARDS

- Dr. Ursano was selected as the recipient of the 2018 American Psychiatric Association's (APA) Bruno Lima Award in Disaster Psychiatry. The APA Bruno Lima Award recognizes the outstanding contributions of APA members in the care and understanding of the victims of disaster. Dr. Ursano received the award because of his demonstrated leadership and exceptional achievements as a disaster mental health educator, researcher, leader and responder, and because of his contributions to the psychiatric care of victims of disasters throughout the world.
- The CSTS Poster, "Does pretesting impact study behaviors and subject examination scores in

clerkship” was awarded first place for original research at the Annual Meeting of Directors of Medical Student Education in Psychiatry in Minneapolis, MN.

- Dr. Spangler was selected as a Fellow for the 2018 NIH Summer Institute on Randomized Behavioral Clinical Trials.
- At the AACAP Annual Meeting, the Disaster and Trauma Issues committee was named the 2018 recipient of the Catchers in the Rye Award in recognition of its ongoing support to AACAP members and communities around the country affected by human and natural disasters. The Catchers in the Rye Award was established in 1996 to recognize a committee or group within AACAP for outstanding efforts on behalf of children and adolescents. Dr. S. J. Cozza spearheaded the development of the committee after the events of September 11. He served as Chair/Co-chair of the committee for many years and continues to support the committee’s response efforts.
- The CSTS poster, “Firearm accessibility and suicide: Results from the Army Study to Assess Risk and Resilience in Servicemembers” was selected as one of two Military SIG posters presented at the ISTSS conference in Washington, DC.
- Dr. Ursano was named an Emeritus Fellow of the American College of Psychiatrists, one of the most distinguished medical organizations for psychiatrists.
- The book Dr. Flynn developed and edited with Mr. Ronald Sherman titled “Integrating Emergency Management and Disaster Behavioral Health: One Picture Through Two Lenses” (2017) was selected as a textbook for the Emergency Management degree program at Oklahoma State University in Oklahoma City.
- The CSTS publication in the *American Journal of Psychiatry* by Dr. S. J. Cozza et al, “Performance of DSM-5 persistent complex bereavement disorder criteria in a community sample of bereaved military family members,” was awarded an Honorable Mention in the Military Family Research Institute’s Excellence in Research on Military and Veteran Families.
- Dr. Russell was appointed to the U.S. Food and Drug Administration’s Drug Safety and Risk Management Advisory Committee to advise the Commissioner’s leadership on behavioral aspects of risk management, risk communication, and quantitative evaluation of reports for drugs for human use and any other products for which the agency has regulatory responsibility.
- Dr. Russell was appointed to the State of Maryland’s Medical Reserve Corps’ advisory council which provides strategic direction for the State’s Medical Reserve Corps.
- The 2017 CSTS Annual Report won an “American Graphic Design Award” from Graphic Design USA (GDUSA).



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GRANT	FUNDING INSTITUTION
Evaluation of the Safety and Pharmacokinetics of the FAAH Inhibitor URB597	USAMRMC
Brain Bank Project: Consortium for the Translational Neuroscience and Treatment of Stress and PTSD (VA Biorepository Brain Bank: PTSD Brain Bank Protocol)	VA
Study to Assess Risk and Resilience in Servicemembers—Longitudinal Study (STARRS-LS)	DHP
Family Violence and Trauma Project	IMCOM
GREAT-SF (Grief-Focused Resilience Activities and Training for Surviving Families): An Online Selective Intervention for Bereaved Military Families	CDMRP
Military-Related Risk for Child Neglect in DoD Families: A Population Study to Inform Future DoD Child Neglect Prevention Efforts	MCFP
Enhancing Fear Extinction via Angiotensin Type 1 Receptor Inhibition: A Randomized Controlled Trial in Post-traumatic Stress Disorder	UCSD
Examination of the Short and Long-term Impact of School Shootings	UCLA
Pilot Trial of Nightmare Deconstruction and Reprocessing, a Novel Treatment for PTSD-Related Nightmares and Insomnia	USAMRMC
Identifying Predictors of Treatment Response in Service members with Post-traumatic Stress Disorder Related Sleep Disturbances: Use of Large Datasets to Improve Treatment Selection over the Military Lifecycle	USAMRMC
Support for Voices of September 11th – Public Safety Canada	Voices of September 11th
Center for the Study of Traumatic Stress (CSTS) Program	DHP

Partnerships

CSTS would like to acknowledge and thank our partners and collaborators. The Center has worked with organizations in the public and private sector through research partnerships, project collaborations, consultations and trainings.

Alfred P. Sloan Foundation
Alliance of Hope
American Academy of Child and Adolescent Psychiatry
American Association of Suicidology
American Gold Star Mothers
American Psychiatric Association
American Psychological Association
Architect of the Capitol
Armed Forces Retirement Home
Army OneSource
Association for Death Education and Counseling
Broad Institute
California Mental Health Services Authority
The Carter Center
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National Center for PTSD of the Department of Veterans Affairs
National Child Traumatic Stress Network
National Committee for Employer Support of the Guard and Reserve
National Defense Medical College, Japan
National Fallen Firefighters Foundation
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Psychiatric Genomics Consortium
Psychological Health Center of Excellence
Rockefeller University
Rutgers University Cell & DNA Repository
Rutgers University School of Social Work

Sesame Workshop
Sheppard Pratt Health System
Snowball Express
Stanford University
Substance Abuse and Mental Health Services Administration
Suicide Awareness Voices of Education
Syracuse University
Syracuse VA Medical Center
The Compassionate Friends
Tragedy Assistance Program for Survivors
Travis Manion Foundation
Tulane School of Social Work
Uniformed Services University
Union Pacific Railroad
University of California, Irvine
University of California, Los Angeles
University of California, San Diego
University of Maryland
University of Melbourne, Australia
University of Michigan
University of Minnesota
University of Pennsylvania
University of Pittsburgh
University of South Carolina
University of South Dakota Disaster Mental Health Institute
University of Virginia
University of Virginia's Critical Incident Analysis Group
University of Washington
University Medical Center Utrecht, Netherlands
U.S. Air Force
U.S. Army
U.S. Army Family Advocacy Program
U.S. Army Family Programs
U.S. Army Installation Management Command
U.S. Army Medical Research and Materiel Command
U.S. Department of Agriculture
U.S. Department of Defense
U.S. Department of Energy
U.S. Department of Health and Human Services
U.S. Department of Homeland Security
U.S. Department of Justice
U.S. Department of State
U.S. Department of Veterans Affairs
U.S. Navy
U.S. Postal Service
VA Connecticut Healthcare System
Veterans Administration Medical Center of DC
Virginia Commonwealth University
Voices of September 11th
Walter Reed Army Institute of Research
Walter Reed National Military Medical Center
West Virginia University
Western New York Psychiatric Society
Wright State University
Yale University
Yellow Ribbon Reintegration Program
Zero to Three

Snapshots of CSTS



2018 CSTS Army 10-Miler Team.



Drs. Cozza and Benedek.



CSTS staff and scientist presenting a poster.



Dr. Stokes making a presentation at CSTS.



Dr. Wynn.



Trauma team weekly meeting.



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